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Current Economic Analysis I-29

Industrial Fishery Products

Market Review and Outlook

Industry and Consumer Services Division
Washington, D.C.

June 1977

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL MARINE FISHERIES SERVICE

INDUSTRIAL FISHERY PRODUCTS MARKET REVIEW AND OUTLOOK

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SUMMARY

Supplies of fish meal and solubles increased from a year earlier; supplies of fish oil declined. Production of fish meal rose 7 percent on the strength of an 11-percent gain in menhaden meal production. Fish solubles production, likewise, increased as a result of higher menhaden production, rising 14 percent to 95,300 short tons. The quantity of fish oil produced, however, declined 17 percent from 1975 since production from every major species was lower.

Imports of fish meal rose to 140,000 short tons, a 19-percent gain. Higher shipments from Norway and Peru prompted the overall gain in imports. Receipts of solubles, although relatively insignificant, also increased. Imports of fish oil were above a year earlier.

As in the United States, world production of fish meal increased substantially. Production in the seven major exporting countries was 18 percent above the previous year. Exports, however, declined 4 percent to 1,638,700 metric tons and FEO stocks on December 31 were above a year earlier.

Prices of all three products increased substantially from year-earlier levels. After being fairly stable during the early months of 1976, prices rose sharply during May, June, and July. Thereafter, prices generally stabilized until December when they began to climb again.

The outlook for industrial fishery products is for generally higher supplies and firm markets. Production of both fish meal and solubles is expected to increase from year-earlier levels; production of fish oil will likely be about the same. Imports of fish meal will probably also increase as a result of high production in Peru. High production of poultry, tight soybean supplies, and high consumer demand for poultry products are expected to help keep markets strong and cause prices to rise.

FISH MEAL

REVIEW

New supplies of fish meal (domestic production and imports) in the United States during 1976, increased about 5 percent from a year earlier. The total quantity of new supplies received increased to 439,200 short tons, but this amount was still well below quantities entering the market before 1973. 1/

Domestic Production Increases

About 298,700 tons of fish meal were produced in the United States during 1976--a 7-percent increase from 1975 production levels (fig. 1). Production during the second half of the year rose 14 percent from the same period in 1975 to 197,700 short tons, compared to a 5-percent decline in the first half (table 1).

The overall increase in U.S. production was primarily the result of a significant increase in menhaden meal production. Menhaden meal production increased to about 212,600 tons in 1976 from the 191,400 tons the year before. Production of tuna and mackerel meal increased nearly 8 percent; production from unclassified species was 5 percent higher. However, production of fish meal from anchovies declined 20 percent from 1975. The total value of fish meal production during 1976 rose to an estimated $96 million, from the $65 million in 1975. The estimated value of menhaden meal increased from about $46 million in 1975 to around $73 million in 1976--a 59-percent gain. The rise in menhaden meal production was the result of a 12-percent increase in landings (tables 2 and 3). Total landings of menhaden during 1976 were 1.96 billion pounds compared to the 1.75 billion pounds landed a year earlier. Landings increased 29 percent in the Atlantic and 4 percent in the Gulf.

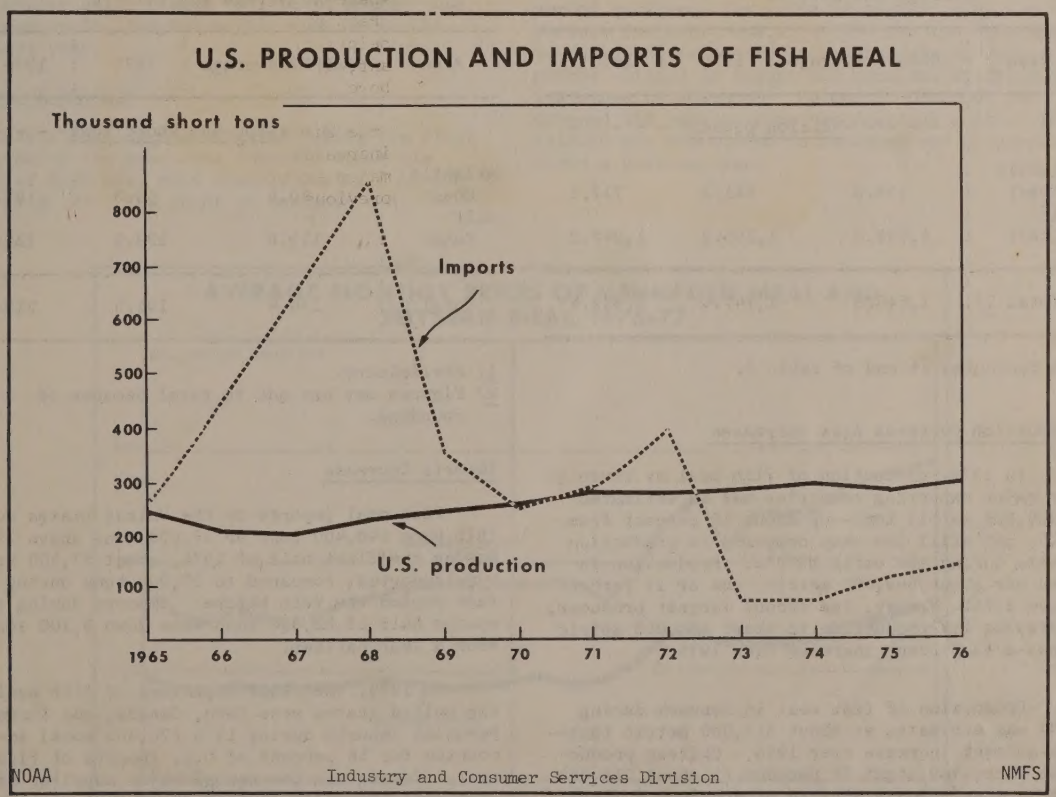

Figure 1

1/ Unless otherwise specified, all data are in short tons. To convert metric tons to short tons multiply by 1.1023.

Table 1.--Fish meal supplies and chick placements

Period	Fish meal supplies		Total supplies	Chick placements
	production	Imports		
	-Thousand short tons-			-Million birds-
1966-75 average	254.7	349.5	604.1	2,877.0
1974 1st half	116.3	9.1	125.4	1,606.5
2nd half	175.3	59.2	234.6	1,329.9
Total	291.6	68.3	360.0	2,936.4
1975 1st half	106.4	27.0	133.4	1,526.2
2nd half	172.8	91.4	264.2	1,472.5
Total	279.2	118.4	397.6	2,998.7
1976 1st half	101.1	57.1	158.2	1,695.4
2nd half	197.7	83.3	281.0	1,594.4
Total	298.8	140.4	439.2	3,289.0

Table 2.--Menhaden landings by area, 1966-75 average and 1975-76

Area	1966-75 average	1975	1976 1/
	-Million pounds-		
Atlantic Coast	554.8	551.2	712.2
Gulf Coast	1,095.0	1,196.2	1,247.2
Total 2/	1,649.8	1,747.4	1,959.4

Table 3.--Menhaden meal production by area, 1966-75 average and 1975-76

Area	1966-75 average	1975	1976 1/
	-Thousand short tons-		
Atlantic Coast	60.6	63.3	80.3
Gulf Coast	113.8	128.2	132.2
Total 2/	174.4	191.5	212.5

1/ Preliminary.
2/ Figures may not add to total because of rounding.

See footnotes at end of table 3.

Production Overseas Also Increases

In 1976, production of fish meal by seven of the major exporting countries was an estimated 2,208,800 metric tons--up about 18 percent from 1975, but still low when compared to production levels during the early 1970's. Production in Peru was about 849,000 metric tons or 19 percent above 1975. Norway, the second largest producer, increased its production to about 464,000 metric tons--a 43-percent increase over 1975.

Production of fish meal in Denmark during 1976 was estimated at about 315,000 metric tons--a 5-percent increase over 1975. Chilean production increased about 76 percent to about 218,000 metric tons. South African production of fish meal declined to 208,300 metric tons, 15 percent below 1975.

Imports Increase

Fish meal imports by the United States during 1976 were 140,400 tons or 22,000 tons above 1975. During the first half of 1976, about 57,100 tons were imported, compared to 27,000 tons during the same period the year before. Imports during the second half of 83,300 tons were down 8,100 tons from a year earlier.

In 1976, the chief suppliers of fish meal to the United States were Peru, Canada, and Norway. Peruvian imports during 1976 (70,400 tons) accounted for 56 percent of U.S. imports of fish meal. Canada was the second major supplier of fish meal, providing around 24 percent of total imports. Norway, after being absent from our market in 1975, shipped 15,900 tons to the United States in 1976.

U.S. Exports Increase While FEO Exports Slip

The United States exported 33,100 tons of fish meal during 1976--21,200 tons more than the year before. After a slow start, exports rose above prior-year levels in the second quarter and remained higher throughout the rest of the year.

Exports from the major FEO countries, on the other hand, slipped about 5 percent from a year earlier. The reduced shipments was primarily from Peru and South Africa, which declined 21 and 71 percent, respectively. Shipments from Iceland also declined, falling 10 percent from 1975 levels. Countries which shipped increased quantities during 1976 included Chile, Denmark, and Norway.

FEO Stocks Increase

Stocks of fish meal in five major FEO countries on December 31, were 340,300 metric tons, 84 percent above a year earlier and 38 percent above the 1972-75 average. The quantity in storage was higher in each of the five countries. Peru posted the largest gain, rising to 158,900 metric tons on December 31, 118,800 metric tons above the previous year.

Prices Up Sharply

After posting modest gains during the first 5 months of the year, the domestic wholesale price of fish meal rose sharply during June and July (fig. 2). The price of menhaden meal (60 percent protein), for example, rose to $385 per short ton in July from the $283 averaged in May. Prices declined from the July level in August and remained generally steady until December when an 8-percent increase was recorded. The $396.88 average price for menhaden meal in December was nearly 50 percent above a year earlier. Similar pricing patterns were recorded by tuna and imported Peruvian fish meal. The wholesale price for tuna meal in December 1976 was $295.62 per ton compared to $201.50 a year earlier. The price of Peruvian fish meal in December was $388.75 per ton, up 47 percent from the same month in 1975.

Fish meal prices in Europe also followed the same general pattern as menhaden meal in the United States and were 56 percent above a year earlier in December. Except for June and July, prices of fish meal in Europe were consistently above those in the United States throughout the year.

Wholesale prices of soybean meal also increased sharply; most of the gain occurred in the second quarter. The price of soybean meal (50 percent protein) rose about $64 per ton from April to June. After posting a slight gain in July, prices slipped in August and remained stable from September to November. Prices in December increased $19 per ton from the previous month. The $212.60 per ton quoted in December was 61 percent above a year-earlier.

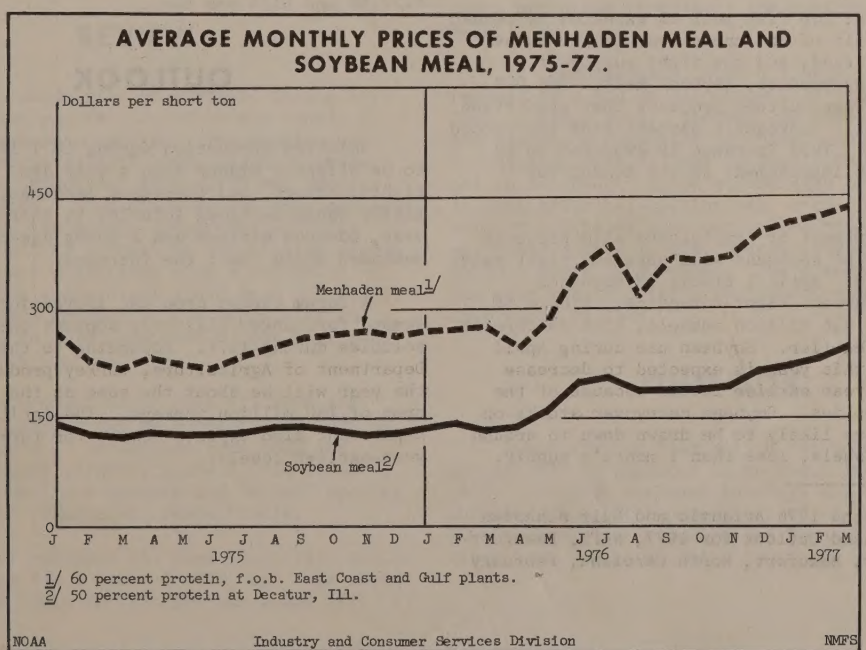
AVERAGE MONTHLY PRICES OF MENHADEN MEAL AND SOYBEAN MEAL, 1975-77.
Dollars per short ton
450
300
150
0
Menhaden meal 1/
Soybean meal 2/
J F M A M J J A S O N D J F M A M J J A S O N D J F M
1975
1976
1977
1/ 60 percent protein, f.o.b. East Coast and Gulf plants.
2/ 50 percent protein at Decatur, Ill.
NOAA
Industry and Consumer Services Division
NMFS

Figure 2

OUTLOOK

Total new supplies of fish meal are expected to increase from year-earlier levels as a result of both higher domestic production and imports. Domestic production of menhaden meal could increase as much as 5 percent from 1976. Reports indicate that menhaden meal producers in the Gulf are planning to add two vessels to the fleet and three more vessels are planned for the Atlantic fleet. 2/ Lower production of tuna meal, however, could partially offset the gain in menhaden meal production. If landings of tuna decline from the record levels of a year ago and an improvement in canning technology reduces tuna scrap available for fish meal production, production of tuna meal could decline moderately from the amount produced in 1976.

Imports of fish meal will likely increase significantly during 1977 on the strength of higher supplies in the major exporting countries. Inventories at the beginning of the year in the major exporting countries were 84 percent above a year earlier, and production is expected to increase significantly. For example, production in Peru, which constitutes more than a third of the major exporting countries production, could increase as much as 15 percent from 1976. In addition, imports will likely increase as a result of the recent rise in prices in the United States above those in Europe. In March, for example, the price of menhaden meal in the United States was $433.75 per ton compared to $401.16 per ton for fish meal in Northwest Europe.

The market for fish meal is expected to remain firm as a result of an improvement in the number of poultry on feed, and the tight supply of a major competing product, soybean meal. The U.S. Department of Agriculture projects that production of broilers will increase 5 percent from the record level in 1976. This increase is expected to be prompted by an improvement in the demand for broilers.

The Department of Agriculture also projects that supplies of soybeans will continue tight relative to demand. April 1 stocks of soybeans confirm the current tight situation. Stocks of soybeans were 616 million bushels, some 29 percent below a year earlier. Soybean use during April to August of this year is expected to decrease sharply from year earlier levels because of the dwindling supplies. Soybean carryover stocks on September 1 are likely to be drawn down to around 65 million bushels, less than 1 month's supply.

Soybean meal production is expected to decline 4 to 8 percent from a year earlier. The demand for soybean meal will likely remain strong, but supplies will be limited because of reduced production, and prices are expected to average well above the year-earlier levels.

FISH SOLUBLES

REVIEW

The combined total of domestic production and imports in the United States during 1976 was 134,100 tons, a 5-percent increase from 1975 (fig. 3). Domestic production increased 4 percent to 132,900 tons. Menhaden solubles production rose to 95,300 tons, 14 percent above a year earlier. That increase, however, was partially offset by a 15-percent decline in production of solubles from other species.

The annual average price of menhaden solubles, as quoted by brokers in New York City, was $123.85 per ton in 1976, the highest since 1973 and 86 percent above a year earlier. Prices steadily increased during the first half of the year, rising from $75 per ton in January to $138.75 in July. The wholesale price of menhaden solubles declined slightly in August and remained relatively stable through the rest of the year, ranging between $127.50 and $135 per ton.

OUTLOOK

Solubles production during 1977 is expected to be slightly higher than a year ago. Increased fishing effort, and therefore landings, will likely cause menhaden solubles to increase. However, adverse weather and a young age-class of menhaden could limit the increase.

A large turkey crop and increasing consumer demand for turkey will help support the market for solubles during 1977. According to the U.S. Department of Agriculture, turkey production during the year will be about the same as the record 1976 crop of 140 million turkeys. The Agricultural Department also expects demand for turkey to exceed year-earlier levels.

2/ Review of the 1976 Atlantic and Gulf Menhaden Fisheries and Outlook for 1977, NMFS, Beaufort Laboratory, Beaufort, North Carolina, February 1977.

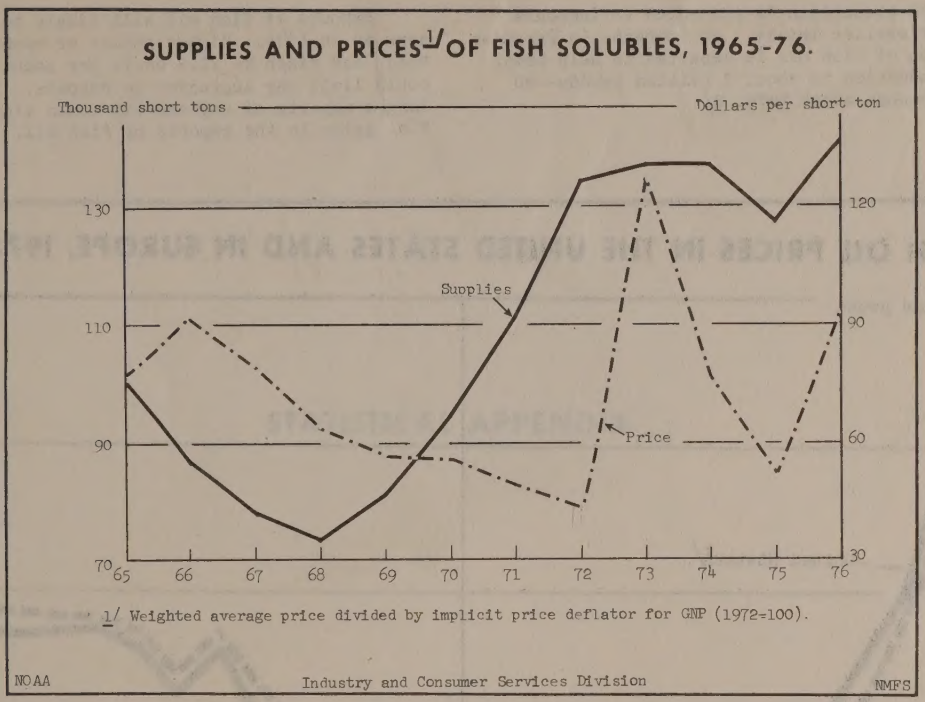

Figure 3

FISH OIL

REVIEW

Domestic production of fish oil during 1976 was 204 million pounds (92,500 metric tons), 17 percent below a year earlier. The decline was primarily associated with lower menhaden production although production from all other species also was reduced. Production of oil from menhaden, which accounts for nearly 90 percent of total production, fell 13 percent to 186 million pounds. This decline was associated with a reduction in oil yield. The average oil yield from the reduction of menhaden dropped to 9.5 percent of the landed weight in 1976, compared to the 12.2 percent yield of a year earlier.

Combined production of fish oil from all other species fell about 44 percent from 1975 to 18 million pounds. Production from tuna and mackerel was only slightly below a year earlier, but oil produced from anchovy and "other" species was off 60 and 50 percent, respectively.

Prices of menhaden oil were relatively stable throughout the first half of 1976, but rose about 17 percent in July to 18 cents per pound (fig. 4). After declining to 16.6 cents per pound in August, prices remained fairly stable between 18 and 18.7 cents per pound throughout the remainder of the year.

In world markets, fish oil supplies were reduced by a ban on all exports of fish oil by Peru in early June. The ban was associated with low stocks, a reduction in production, and an increase in fish oil use in Peru. Prices of fish oil in Northwest Europe accordingly began to rise in June after being relatively stable during the first 5 months of the year. From the 15.3 cents per pound quoted in May, prices steadily moved up to 19.2 cents in November. The average price for the year was 16.9 cents per pound, compared to 15.6 cents in 1975.

OUTLOOK

Production of fish oil in the United States during 1977 is expected to be about the same as in 1976. Although menhaden landings are expected to increase, a greater percentage of the catch will likely consist of juvenile and 1-year-old menhaden which have a substantially lower oil yield.

World production is projected to increase from year earlier levels. An increase in Peruvian production of fish oil is expected to help boost world production to about 2 billion pounds--90 million pounds above 1976. 3/

Exports of fish oil will likely be about the same as in 1976. Higher prices of menhaden oil, which had risen to 21.2 cents per pound in March, could limit any increases in exports. In addition, larger exports of soybean oil could limit potential gains in the exports of fish oil.

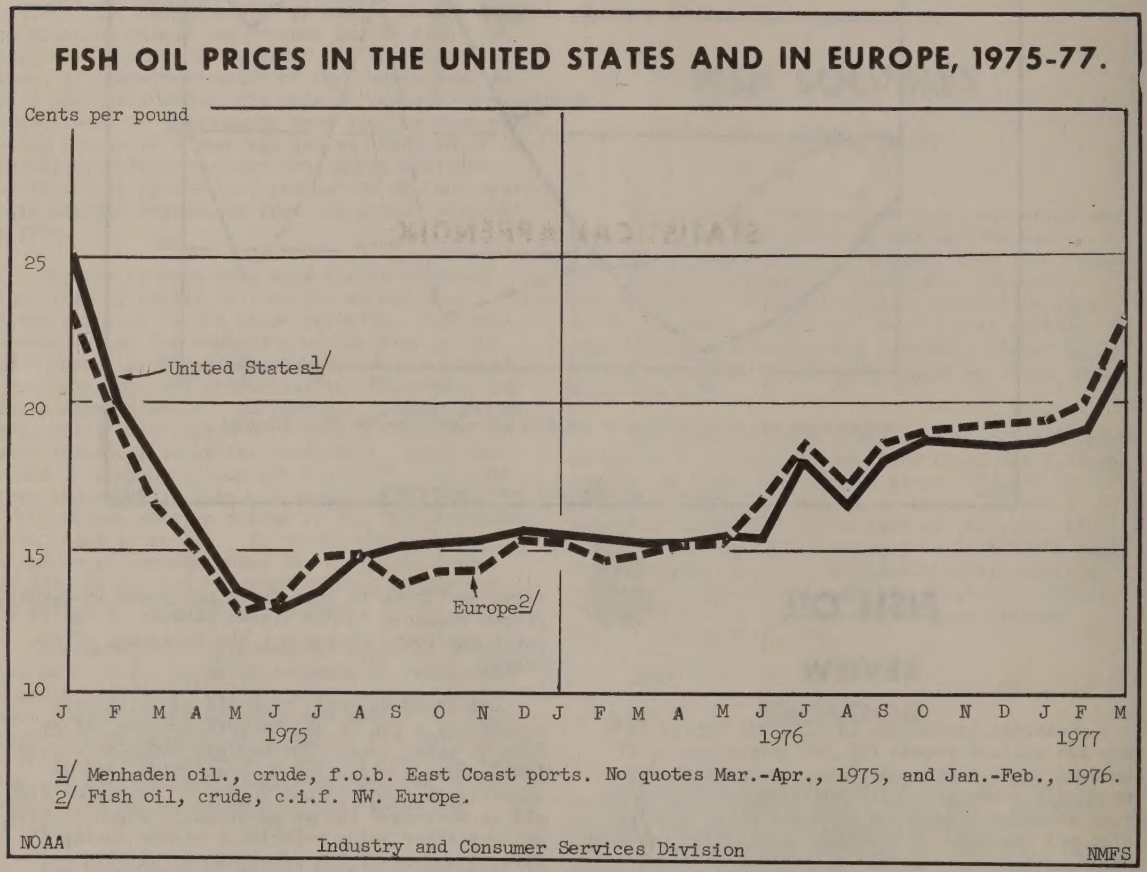
FISH OIL PRICES IN THE UNITED STATES AND IN EUROPE, 1975-77.
Cents per pound
25
20
15
10
United States 1/
Europe 2/
J F M A M J J A S O N D J F M A M J J A S O N D J F M
1975
1976
1977
1/ Menhaden oil., crude, f.o.b. East Coast ports. No quotes Mar.-Apr., 1975, and Jan.-Feb., 1976.
2/ Fish oil, crude, c.i.f. NW. Europe.
NOAA
Industry and Consumer Services Division
NMFS

Figure 4

3/ U.S. Department of Agriculture, Foreign Agriculture Service, FOP 25-76.

STATISTICAL APPENDIX

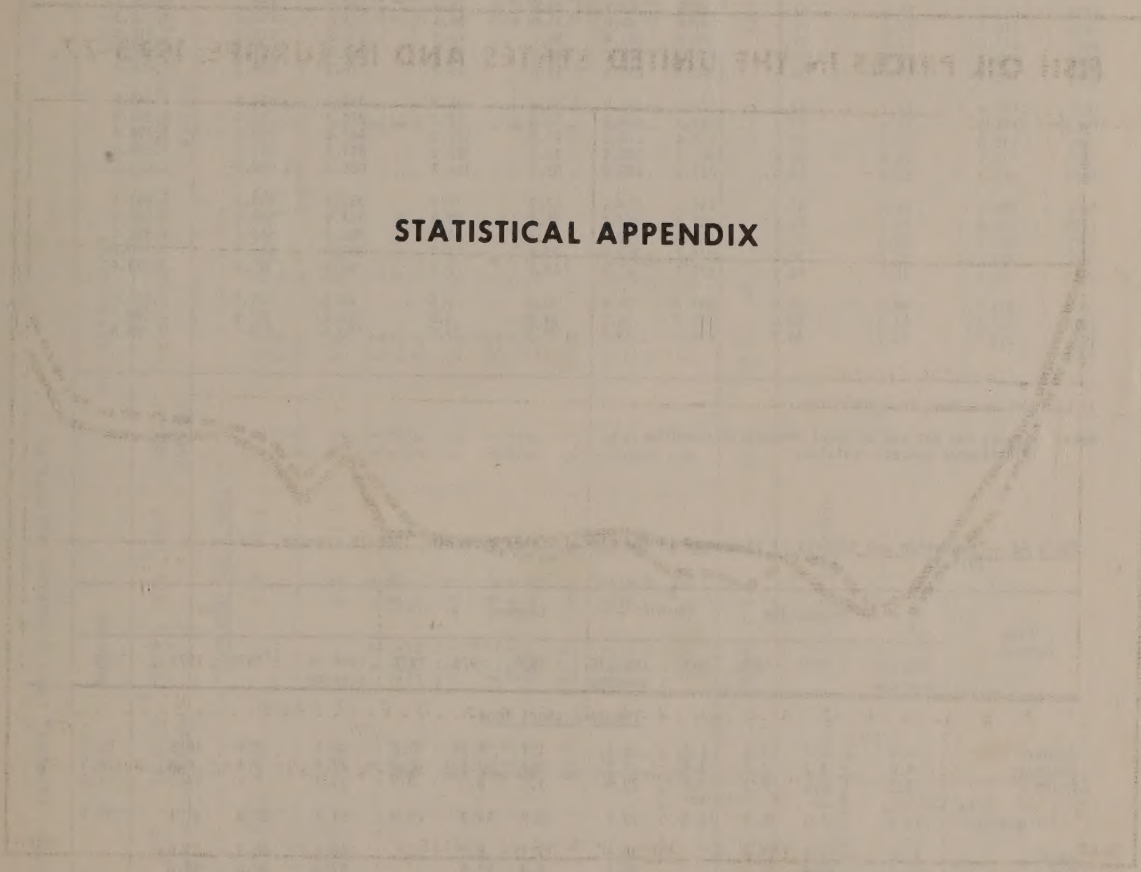

Table A1.--Fish meal production, imports, and chicks placement, 1959-76 1/

Year	Fish meal production				Imports				Total production plus imports	Chicks placement
	Menhaden	Tuna and mackerel	Other species	Total	From Peru	From Canada	From other countries	Total		
	Thousand short tons									Million birds
1959	223.9	25.4	47.5	296.8	49.9	39.0	44.0	132.9	429.7	1,632.7
1960	218.4	26.5	36.5	281.4	68.2	31.0	32.4	131.6	413.0	1,738.3
1961	247.6	21.2	31.7	300.5	151.4	38.2	28.2	217.8	518.3	1,916.5
1962	239.7	26.6	34.7	301.0	186.2	42.8	23.2	252.3	553.3	1,993.9
1963	182.4	27.0	36.8	248.0	285.4	51.0	39.9	376.3	624.3	2,054.4
1964	160.4	21.1	43.6	225.1	348.0	54.8	36.3	439.1	664.2	2,149.6
1965	176.0	25.4	41.1	242.3	209.8	43.8	17.0	270.7	513.0	2,368.8
1966	135.0	25.3	52.1	212.4	276.6	43.6	127.5	447.8	660.2	2,594.4
1967	119.1	25.5	56.8	201.4	442.5	46.6	162.3	651.5	852.9	2,594.8
1968	143.2	28.8	55.0	227.0	635.9	65.1	154.2	855.3	1,082.3	2,621.7
1969	159.5	26.9	57.8	244.1	218.1	67.8	72.4	358.4	602.5	2,847.1
1970	188.6	26.7	41.8	257.0	153.2	75.4	22.8	251.5	508.5	3,000.9
1971	221.0	29.3	32.6	282.9	199.6	57.6	26.0	283.2	566.1	2,982.2
1972	193.6	43.2	37.3	274.1	352.2	27.6	12.1	392.0	666.1	3,110.2
1973	188.8	43.6	46.7	279.1	41.8	24.6	2.2	68.5	347.5	3,029.4
1974	203.9	48.2	39.5	291.6	29.4	30.3	8.6	68.3	359.9	2,935.9
1975	191.4	37.2	50.5	279.2	75.5	34.0	8.9	118.4	397.6	2,998.7
1976	212.6	40.1	46.2	298.8	79.4	34.0	27.0	140.4	439.1	3,289.8
1977										

1/ Excludes meal made from shellfish.

Note: Figures may not add to total because of rounding.
1976 figures subject revision.

Table A2.--Production and imports of fish meal in the United States by month, 1966-75 average, and 1975-77

Time period	Production				Imports				Total			
	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977
	Thousand short tons											
January	4.4	6.7	6.3	4.7	25.7	1.7	4.2	10.3	30.1	8.4	10.5	15.0
February	4.0	4.7	4.0	3.4	23.5	0.7	2.5	8.9	27.5	5.4	6.5	12.3
March	5.2	5.6	6.1	8.4	28.9	1.5	8.0	3.4	24.1	7.1	14.1	11.8
1st quarter	13.6	17.0	16.4	16.5	78.1	3.9	14.7	22.6	91.7	20.9	31.1	39.1
April	12.0	11.2	17.6		34.6	17.1	6.0		46.6	28.3	23.6	
May	27.4	35.6	25.0		30.1	2.4	21.8		57.5	38.0	46.8	
June	41.4	42.6	42.1		34.6	3.6	14.6		76.0	46.2	56.7	
2d quarter	80.8	89.4	84.7		99.3	23.1	42.4		180.1	112.5	127.1	
July	47.4	53.5	55.7		34.0	24.9	13.1		81.4	78.4	68.9	
August	41.6	38.3	54.1		32.0	14.3	12.6		73.6	52.7	66.7	
September	28.9	32.5	41.8		29.0	13.8	26.2		57.9	46.3	68.0	
3d quarter	117.9	124.3	151.7		95.0	53.0	51.9		212.9	177.3	203.6	
October	18.6	23.2	18.6		27.1	13.4	15.8		45.7	36.6	34.4	
November	14.2	13.5	14.8		23.1	22.6	10.8		37.3	36.1	25.6	
December	9.6	11.8	12.6		26.8	2.5	4.8		36.4	14.3	17.4	
4th quarter	42.4	48.5	46.1		77.0	38.5	31.4		119.4	87.0	77.4	
Total	257.7	279.2	298.8		349.5	118.4	140.4		604.1	397.6	439.2	

Note: Production excludes meal from shellfish. 1976 figures subject to revision.
Figures may not add to total because of rounding.

Table A3.--U.S. fish meal production by species, by month, 1966-75 average, and 1975-77

Time period	Anchovy				Menhaden				Tuna and mackerel				Unclassified			
	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977
	-Thousand short tons-															
January	1.3	3.1	3.0	0.7	0.1	1/	0.3	1.1	1.9	2.6	2.5	2.0	1.1	1.0	0.6	1.0
February	0.8	1.5	1.0	.1	-	-	-	-	2.0	2.4	2.1	2.2	1.2	0.9	0.9	1.1
March	0.5	0.7	1.1	3.3	-	-	-	-	3.0	3.6	3.8	3.6	1.7	1.3	1.2	1.5
1st quarter	2.6	5.2	5.1	4.1	0.1	-	0.3	1.1	6.9	8.6	8.4	7.8	4.0	3.2	2.6	3.6
April	1.2	3.4	3.9		4.6	3.2	8.5		3.4	3.3	3.6		2.8	1.4	1.6	
May	1.0	3.3	0.6		20.3	27.5	18.9		3.0	2.2	3.3		3.1	2.6	2.2	
june	-	-	-		34.1	37.0	35.7		3.2	3.5	3.2		4.1	2.1	3.2	
2d quarter	2.2	6.7	4.5		59.0	67.7	63.1		9.6	9.0	10.1		10.0	6.1	6.9	
July	0.1	-	-		39.1	47.3	49.2		3.1	3.5	3.4		5.1	2.8	3.2	
August	0.1	-	-		33.2	29.9	46.5		3.2	3.7	3.6		5.1	4.8	3.9	
September	0.8	1.7	0.7		20.9	25.5	34.0		2.8	3.1	3.7		4.4	2.2	3.4	
3d quarter	1.0	1.7	0.7		93.2	102.7	129.7		9.1	10.3	10.7		14.6	9.7	10.5	
October	2.2	5.3	1.9		10.7	12.7	10.9		2.0	3.3	3.5		2.7	1.9	2.3	
November	2.3	3.6	4.7		7.8	5.5	5.5		2.5	3.0	3.5		1.6	1.3	1.2	
December	2.0	5.1	5.0		3.7	2.8	3.0		2.6	3.1	3.9		1.3	0.8	0.7	
4th quarter	6.5	14.0	11.6		22.2	21.1	19.4		8.1	9.4	10.9		5.6	4.0	4.2	
Total	12.3	27.7	22.0		174.4	191.4	212.6		33.5	37.2	40.1		34.5	23.0	24.2	

1/ Included with unclassified.
Note: Production excludes meal from shellfish. 1976 figures subject to revision.
Figures may not add to total because of rounding.

Table A4 --U.S. imports of fish meal by country of origin, by month, 1966-75 average, and 1975-76

Time period	Canada			Chile			Norway			Peru			Other countries		
	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976
	Thousand short tons														
January	3.1	1.6	1.4	0.7	-	-	2.3	-	2.4	18.8	-	-	0.8	0.1	0.3
February	2.7	0.7	2.0	0.8	-	-	2.3	-	0.6	17.2	-	-	0.5	-	-
March	3.7	1.5	2.6	3.3	-	-	1.3	-	3.5	20.3	-	-	0.3	-	1.9
1st quarter	9.5	3.8	6.0	4.8	-	-	5.9	-	6.5	56.3	-	-	1.6	0.1	2.2
April	3.4	2.9	3.1	3.5	5.0	-	1.3	-	2.9	26.1	9.2	-	0.3	-	-
May	3.2	2.4	3.4	3.1	-	-	1.0	-	0.6	22.1	-	17.6	0.7	-	0.2
June	3.3	3.5	2.8	3.2	-	-	1.0	-	2.7	26.8	-	9.1	0.3	-	-
2d quarter	9.9	8.8	9.2	9.8	5.0	-	3.3	-	6.1	75.0	9.2	26.7	1.3	-	0.2
July	4.5	4.8	3.9	1.9	-	-	1.5	-	-	25.3	20.0	6.6	0.8	-	2.6
August	5.8	3.1	4.5	4.5	-	-	1.8	-	-	19.4	10.2	6.9	0.5	1.1	1.1
September	5.8	5.1	3.6	1.9	-	-	4.2	-	-	16.9	8.7	20.4	0.2	-	2.3
3d quarter	16.1	13.0	12.0	8.3	-	-	7.5	-	-	61.6	38.9	33.9	1.5	1.1	6.0
October	5.5	4.1	3.3	3.0	-	-	2.3	-	-	16.1	9.3	9.9	0.2	-	2.6
November	3.2	2.3	2.0	2.9	2.3	-	3.1	-	-	13.7	18.1	8.8	0.2	-	-
December	2.9	2.0	1.5	2.3	0.4	-	1.5	-	3.3	19.8	-	-	0.3	-	-
4th quarter	11.6	8.4	6.8	8.2	2.7	-	6.9	-	3.3	49.6	27.4	18.7	0.7	-	2.6
Total	47.3	34.0	34.0	31.3	7.7	-	23.5	-	15.9	242.5	75.5	79.4	4.9	1.2	11.0

Note: Figures may not add to total because of rounding.

Table A5.--U.S. exports of fish meal, by month, 1972-77

Time Period	1972	1973	1974	1975	1976	1977
	Thousand short tons					
January	-	3.0	8.9	2.0	1.5	-
February	0.3	1.6	8.8	3.4	0.2	0.1
March	0.3	2.6	1.1	0.9	0.3	0.4
1st quarter	0.6	7.2	18.8	6.3	2.0	0.5
April	0.1	3.0	3.9	0.6	2.7	
May	-	0.5	1.9	0.3	0.6	
June	0.1	3.2	3.3	1.2	0.2	
2d quarter	0.2	6.7	9.1	2.1	3.5	
July	0.3	2.4	7.3	0.1	1.7	
August	0.4	1.1	8.9	0.1	2.4	
September	1.9	0.8	8.0	0.4	6.4	
3d quarter	2.6	4.3	24.2	0.6	10.5	
October	1.7	3.5	1.7	0.8	7.9	
November	1.8	3.7	0.6	1.2	3.0	
December	3.6	11.3	1.0	0.9	6.3	
4th quarter	7.1	18.5	3.3	2.9	17.2	
Total	10.5	36.7	55.5	11.9	33.1	

Table A6.-- Peru: Anchovy catch, fish meal production, beginning stocks, total supply, total exports and exports to the United States, 1955-76

Year	Anchovy catch	Fish meal production	Beginning stocks	Total supplies	Total exports	Exports to the United States	Total U.S. fish meal imports	Imports from Peru as percentage of all U.S. imports
	Thousand metric tons					Percent	Thousand metric tons	Percent
1955	1/ 111	20.0	1.6	21.6	18.7	7.9	42.2	88.9	8.9
1956	1/ 172	31.0	0.7	31.7	27.8	7.0	25.2	82.0	8.5
1957	1/ 358	64.5	2.2	66.7	61.6	15.3	24.8	73.7	20.8
1958	1/ 706	127.0	1.2	128.2	105.8	30.2	28.5	91.0	33.2
1959	1/1,847	332.4	11.6	344.0	277.6	45.3	16.3	120.6	37.6
1960	2,940	558.3	45.9	604.2	507.0	61.8	12.2	119.4	51.8
1961	3,520	863.8	77.0	940.8	708.4	137.4	19.4	197.6	69.5
1962	6,690	1,120.8	156.8	1,277.6	1,055.9	168.9	16.0	228.9	73.8
1963	6,423	1,159.2	192.9	1,352.1	1,038.3	258.9	24.9	341.4	75.8
1964	8,863	1,552.2	167.0	1,719.2	1,426.1	315.7	22.1	398.3	79.3
1965	7,242	1,282.0	260.5	1,542.5	1,413.0	190.3	13.5	245.5	77.5
1966	8,530	1,470.5	237.4	1,707.9	1,302.0	251.0	19.3	406.2	61.8
1967	9,825	1,816.0	375.2	2,191.2	1,560.9	401.5	25.7	591.0	68.0
1968	10,263	1,922.0	600.3	2,522.2	2,083.2	576.9	27.7	775.9	74.4
1969	8,960	1,610.8	391.7	2,002.5	1,665.6	197.9	11.9	325.1	60.9
1970	12,383	2,253.6	306.9	2,560.5	1,872.8	139.0	7.4	228.2	60.1
1971	10,274	1,936.6	654.4	2,591.0	1,751.6	181.0	10.3	256.9	70.4
1972	4,447	900.9	786.0	1,686.9	1,528.2	319.6	20.9	355.6	89.9
1973	1,769	423.1	60.0	483.1	351.0	37.9	10.8	62.1	61.0
1974	3,580	914.0	51.9	965.8	631.6	26.6	4.2	62.0	49.9
1975	3,097	711.5	219.5	931.0	747.6	68.5	9.2	107.4	63.8
1976 1/	3,915	849.0	40.1	889.1	593.1	72.0	23.7	127.3	56.6
1977 2/	4,500	976.0	158.9	1,134.9	800.0				

1/ Preliminary.
2/ Estimated.

Table A7.--Production of fish meal in seven major exporting countries, January-December 1975-76 1/

Country	1975	1976	Percentage of total production		Percentage change from 1975 to 1976
			1975	1976	
	-Thousand metric tons-		-Percent-		
Canada	41.4	45.0 2/	2.2	2.0	+ 8.7
Chile	124.4	218.3	6.5	9.9	+ 75.5
Denmark	300.0	315.0 2/	15.6	14.3	+ 5.0
Iceland	117.1	109.1	6.1	4.9	- 6.8
Norway	325.2	464.1	16.9	21.0	+ 42.7
Peru	711.5	849.0	37.1	38.4	+ 19.3
South Africa	244.4	208.3	12.7	9.4	- 14.8
Total	1,864.0	2,208.8	100.0	100.0	+ 18.5

See footnotes at end of table 9

Table A8.--Exports of fish meal from FEO countries and Denmark, January-December, 1975-76 1/

Country	1975	1976	Percentage of total exports		Percentage change from 1975 to 1976
			1975	1976	
	-Thousand metric tons-		-Percent-		
Chile	118.3	198.1	6.7	12.1	+ 67.4
Denmark	275.5	284.3	15.5	17.3	+ 3.1
Iceland	113.6	102.4	6.4	6.2	- 9.8
Norway	317.4	417.7	17.9	25.5	+ 31.6
Peru	747.6	593.1	42.1	36.2	- 20.7
South Africa	148.2	43.1	8.4	2.6	- 70.9
Total	1,720.8	1,638.7	100.0	100.0	- 4.8

See footnotes at end of table 9

Table A9.--FEO fish meal stocks held December 31, 1975 and 1976 1/

Country	1975	1976	Percent of FEO total stocks		Percentage change from 1975 to 1976
			1975	1976	
	-Thousand metric tons-		-Percent-		
Chile	27.0	36.4	13.7	10.7	+ 34.8
Iceland	1.8	3.7	0.9	1.1	+105.6
Norway	114.2	139.4	57.8	41.0	+ 22.1
Peru	40.1	158.9	20.3	46.7	+296.2
South Africa	1.8	1.9	0.9	0.6	+ 5.6
Total	184.9	340.3	100.0	100.0	+ 84.0

1/ Data for Angola during 1976 not available. Data for Angola during 1975 was: production - 55,200 metric tons, exports - 53,700 metric tons, and December 31 stocks - 12,500 metric tons.
2/ Estimated.

Note: 1976 figures preliminary.
Figures may not add to total because of rounding.

Source: Fish Meal Exporters Organization.

Table A10.--FEO exports of fish meal by country of destination, January-December, 1975-76

Country	Exports		Percentage of total exports		Percentage change from 1975 to 1976
	1975	1976	1975	1976	
	-Thousand metric tons-		-Percent-		
Benelux	52.1	39.0	3.5	2.9	- 25.1
France	37.3	47.4	2.5	3.5	+ 27.1
Germany, West	269.7	249.0	18.0	18.4	- 7.7
Greece	10.3	8.1	0.7	0.6	- 21.4
Italy	73.0	64.6	4.9	4.8	- 11.5
Portugal	22.3	6.0	1.5	0.4	- 73.1
Spain	16.7	1.1	1.1	0.1	- 93.4
Switzerland	16.5	7.3	1.1	0.5	- 55.8
UK/Eire	119.2	99.7	8.0	7.4	- 16.4
Scandinavian countries 1/	84.1	109.1	5.6	8.0	+ 29.7
U.S.S.R.	33.2	7.0	2.2	0.5	- 78.9
Other East European countries	343.8	372.1	22.9	27.5	+ 8.2
United States 2/	77.9	90.8	5.2	6.7	+ 16.6
Latin American countries 3/	112.8	55.2	7.5	4.1	- 51.1
Japan	72.7	43.8	4.8	3.2	- 39.8
P.R. China	-	34.8	-	2.6	+
Philippines	27.8	15.9	1.8	1.2	- 42.8
Singapore	15.3	2.1	1.0	0.2	- 86.3
Taiwan	36.0	12.6	2.4	0.9	- 65.0
Iran	17.1	34.2	1.1	2.5	+ 100.0
Israel	4.3	5.7	0.3	0.4	+ 32.6
Australia	7.5	8.8	0.5	0.6	+ 17.3
Other	49.2	40.1	3.3	3.0	- 18.5
Total	1,498.8	1,354.4	100.0	100.0	- 9.6

1/ Includes Denmark, Finland and Sweden.

2/ Based on export figures reported by FEO countries.

3/ Includes Cuba.

Note: Figures may not add to total because of rounding.
1975 figures preliminary.

Table A11.--Broiler chicks placed in 21 States, and average broiler price at the farm by month, 1966-75 average, and 1975-77

Time period	Chicks placed				Percentage change in chicks placed			Broiler price		
	1966-75 average	1975	1976	1977 1/	in 1975 from 1966-75 average	in 1976 from 1975	in 1976 from 1977	1975	1976	1977
	Million				Percent			Cents/lb		
January	243.3	273.5	299.8	316.0	+ 12.4	+ 9.6	+ 5.4	23.8	24.2	21.5
February	225.2	228.5	246.4	259.1	+ 1.5	+ 7.8	+ 5.2	24.3	25.2	24.0
March	257.3	237.4	264.1	276.8	- 7.7	+ 11.2	+ 4.8	23.5	24.4	24.3
1st quarter	725.8	739.4	810.3	851.9	+ 1.9	+ 10.0	+ 5.1	23.9	24.6	23.3
April	251.3	241.3	272.1	285.0	- 4.0	+ 12.8	+ 4.7	23.2	23.5	24.3
May	275.5	301.6	339.6		+ 9.5	+ 12.6		24.6	24.6	24.3
June	248.6	243.8	273.4		- 1.9	+ 12.1		27.6	24.3	
2d quarter	775.4	786.8	885.1		+ 1.5	+ 12.5		25.1	24.2	
July	248.2	291.2	327.4		+ 17.3	+ 12.4		29.7	25.0	
August	237.6	230.5	253.8		- 3.0	+ 10.1		29.1	23.8	
September	210.8	224.1	247.2		+ 6.3	+ 10.3		29.6	22.8	
3d quarter	696.6	745.8	828.4		+ 7.1	+ 11.1		29.5	24.3	
October	222.2	264.7	284.5		+ 19.1	+ 7.5		28.5	20.6	
November	227.1	227.5	237.4		+ 0.2	+ 4.4		27.0	19.4	
December	230.0	234.5	244.1		+ 1.6	+ 4.1		24.0	19.3	
4th quarter	679.3	726.7	766.0		+ 6.8	+ 5.4		26.5	19.8	
Total	2,877.1	2,998.7	3,289.8		+ 4.2	+ 9.7		26.2	23.2	

Note: Figures may not add to total because of rounding. 1977 figures are preliminary.

Sources: Delmarva Broiler Chick Report, U.S. Department of Agriculture, Statistical Reporting Service, and Poultry and Egg Situation, U.S. Department of Agriculture, Economic Research Service.

Table A12.--Wholesale prices for fish and soybean meals, 1950-76

Year	Menhaden 1/	Imported Peruvian 2/	Tuna and mackerel 3/	Soybean meal 4/	
				44 percent protein	50 percent protein
	Dollars per short ton				
1950	5/127.88	-	-	64.20	-
1951	5/129.55	-	-	67.90	-
1952	133.72	-	5/135.64	83.80	-
1953	133.27	-	5/139.31	64.30	-
1954	135.20	-	5/138.89	79.70	-
1955	135.97	-	5/144.08	56.85	-
1956	134.18	-	5/134.22	51.30	59.45
1957	129.71	5/133.99	5/126.58	47.05	53.90
1958	137.76	141.28	137.63	55.95	63.95
1959	128.06	145.37	129.10	56.45	61.90
1960	93.00	94.90	94.84	53.10	57.95
1961	117.30	110.30	109.90	63.15	69.15
1962	124.05	122.60	120.65	66.50	72.70
1963	125.75	120.85	117.13	72.50	78.60
1964	131.45	131.95	127.66	69.15	77.00
1965	168.50	154.63	157.75	71.45	80.75
1966	161.03	156.40	148.10	83.80	91.86
1967	136.53	130.15	129.60	76.45	83.45
1968	145.27	130.95	125.87	77.45	84.99
1969	174.33	157.10	146.15	74.50	82.91
1970	184.52	194.45	171.30	79.20	87.10
1971	158.00	166.10	141.10	77.85	83.80
1972	185.50	179.20	155.90	104.95	114.34
1973	478.19	451.72	396.35	238.36	264.34
1974	276.07	287.30	270.60	140.85	153.30
1975	239.14	249.72	227.41	124.05	133.38
1976 6/	346.42	341.63	273.17	162.57	173.74

1/ 60 percent protein. Average price quoted by brokers at New York City, weighted by monthly production of menhaden meal.
2/ 65 percent protein. Average f.o.b. East Coast ports price, weighted by monthly imports of Peruvian fish meal. (Bagged to July 1970 and bulk since August 1971).
3/ 60 percent protein. Average price quoted by brokers at Los Angeles, weighted by monthly production. (Bagged to 1970 and bulk since 1971).
4/ Simple average price at Decatur, Ill.
5/ Simple average.
6/ Preliminary.
Source: For soybean meal prices:
U.S. Fats and Oils Statistics 1950-75, U.S. Department of Agriculture.

Table A13.--Wholesale prices of fish and soybean meal in 1972 dollars 1/, 1950-76

Year	Menhaden	Imported Peruvian	Tuna and mackerel	Soybean 44 percent protein	Soybean 50 percent protein
	-Dollars per short ton-				
1950	238.40	-	-	119.69	-
1951	226.21	-	-	118.56	-
1952	230.55	-	233.86	144.48	-
1953	226.34	-	236.60	109.20	-
1954	226.50	-	232.69	133.52	-
1955	222.97	-	236.27	93.23	-
1956	213.36	-	213.39	81.56	94.52
1957	199.49	206.08	194.68	72.36	82.90
1958	208.54	213.87	208.34	84.70	96.80
1969	189.66	215.30	191.20	83.60	91.68
1960	135.43	138.20	138.11	77.33	84.39
1961	169.31	159.21	158.63	91.15	99.81
1962	175.83	173.78	171.01	94.26	103.05
1963	175.65	168.81	163.61	101.27	109.79
1964	180.79	181.47	175.57	95.10	105.90
1965	226.72	208.06	212.26	96.14	108.65
1966	209.78	203.75	192.94	109.17	119.67
1967	172.78	164.70	164.01	96.75	105.61
1968	175.94	158.59	153.44	93.80	102.93
1970	201.97	212.84	187.50	86.69	95.34
1971	164.55	172.98	146.95	81.08	87.27
1972	185.50	179.20	155.90	104.95	114.34
1973	451.98	427.05	374.62	225.29	249.85
1974	237.15	246.80	232.45	120.99	131.69
1975	187.93	196.24	178.71	97.48	104.82
1976 2/	259.00	255.42	204.24	121.55	129.90

1/ Deflated by the implicit price deflator for GNP (1972 = 100).
2/ Preliminary.

Table A14.--Selected average monthly wholesale prices and price ratio of fish meal to soybean meal, 1974-77

Period	Menhaden 1/	Tuna 2/	Imported 3/ Peruvian	Northwest Europe 4/	Soybean 5/ 44% protein	Soybean 5/ 50% protein	Peruvian fish meal to soybean meal
	Dollars per short tons						Price ratio
1974							
January	6/ 532.50	415.25	7/	549.76	172.00	192.40	8/ 2.77
February	6/ 452.20	357.50	7/	416.40	160.00	175.25	8/ 2.58
March	403.75	276.72	7/	458.13	147.10	160.40	8/ 2.52
April	342.00	251.62	7/	354.71	117.20	130.40	8/ 2.62
May	273.10	257.81	7/	367.41	109.25	120.00	8/ 2.28
June	263.00	222.06	7/	294.83	100.00	110.50	8/ 2.38
July	243.50	190.57	7/	254.01	138.10	147.10	8/ 1.66
August	9/ 314.35	9/ 246.81	7/	279.42	155.90	165.90	8/ 1.89
September	275.50	203.50	7/	253.11	138.10	147.25	8/ 1.87
October	301.25	220.00	7/	287.58	168.20	179.80	8/ 1.68
November	297.50	220.00	297.50	266.72	141.00	154.00	1.93
December	281.00	220.00	278.50	268.53	143.40	155.80	1.79
Average	331.66	265.15	288.00	337.55	140.85	153.30	8/ 2.16
1975							
January	263.12	220.00	6/ 262.50	251.29	129.20	137.90	1.90
February	231.25	207.96	6/ 231.90	205.02	117.25	126.90	1.83
March	220.50	193.88	220.50	201.40	117.75	126.50	1.74
April	238.75	206.25	240.00	216.82	122.00	131.80	1.82
May	226.87	207.62	223.12	197.77	118.50	129.00	1.73
June	218.75	211.80	216.25	192.32	120.90	130.75	1.65
July	234.50	213.78	226.25	204.12	124.00	134.20	1.69
August	246.25	219.66	255.83	215.00	134.40	144.20	1.78
September	259.00	218.74	259.00	206.84	133.70	144.30	1.79
October	266.25	202.12	265.00	235.87	125.90	135.90	1.95
November	6/ 269.38	198.00	265.00	271.25	119.90	126.80	2.09
December	6/ 266.25	201.50	265.00	273.06	125.10	132.30	2.00
Average	245.07	208.44	244.20	222.56	124.05	133.40	1.83
1976							
January	6/ 268.75	201.00	270.00	274.88	128.25	136.25	1.98
February	6/ 270.00	206.94	270.62	275.79	132.60	139.25	1.94
March	6/ 273.75	210.87	271.25	273.97	127.90	135.60	2.00
April	253.12	210.25	270.62	274.88	127.10	136.40	1.98
May	283.00	217.25	285.00	300.28	152.25	161.75	1.76
June	353.00	273.30	344.00	336.57	187.90	200.30	1.76
July	385.00	299.13	381.25	367.96	193.90	207.88	1.83
August	324.00	275.00	348.00	360.61	173.30	187.10	1.86
September	361.25	280.25	358.75	420.79	179.20	192.50	1.86
October	6/ 361.88	272.94	351.88	404.38	169.60	182.00	1.93
November	6/ 367.00	286.00	366.50	407.78	181.20	193.30	1.90
December	6/ 396.88	295.62	388.75	415.49	197.60	212.60	1.83
Average	324.80	252.37	325.55	341.10	162.57	173.74	1.87
1977							
January	412.50	321.75	404.50	423.43	207.00	224.25	1.80
February	423.75	357.50	416.66	410.05	211.00	230.38	1.81
March	433.75	364.37	6/ 431.25	410.16	226.20	246.60	1.80
April	6/ 483.12	367.8	479.38	438.86	275.60	299.00	1.60
May	486.00	390.5	482.50	458.81			

1/ 60 percent protein, bulk, quoted by brokers at New York City, f.o.b. East Coast and Gulf plants.
2/ 55 percent protein, bulk, Los Angeles. To March 1975 known as tuna and mackerel, now known also as tuna-mix. Prior to July 1975 reported with 60 percent protein content. 1974 to July 1975 prices, therefore, were converted to reflect 55 percent protein content.
3/ 65 percent protein, bulk f.o.b., East Coast ports.
4/ 65 percent protein, any origin, c & f Hamburg, West Germany.
5/ Bulk at Decatur, Ill.
6/ Nominal price.
7/ Supplies exhausted, no quotes.
8/ Ratio of menhaden meal to soybean meal price.
9/ Asking price.

Source: For Hamburg prices; Oil World, ISTA Mielke & Co. Hamburg, West Germany.
For soybean meal prices: Feed Market News, U.S. Department of Agriculture, Consumer and Marketing Service, Grain Division.

Table A15.--Fish solubles production, imports, and menhaden solubles prices January-December, 1953-76

Year	Production			Imports	Total supplies	Price		Menhaden meal to menhaden solubles
	Menhaden	Other	Total			Actual 1/	In 1972 2/ dollars	
	Thousand short tons					Dollars per short ton		Price ratio
1953	39.5	42.5	81.5	-	81.5	107.50	182.57	1.24
1954	56.3	58.8	115.0	3.6	118.6	98.96	165.79	1.37
1955	61.9	49.0	110.9	3.3	114.2	75.00	122.99	1.81
1956	72.8	56.0	128.8	3.0	131.8	76.23	121.19	1.76
1957	69.4	52.9	122.3	9.7	132.0	93.23	143.39	1.39
1958	72.5	57.7	130.2	14.6	144.8	97.51	147.61	1.41
1959	108.1	57.3	165.4	26.6	192.0	67.62	100.51	1.89
1960	65.8	33.1	98.9	3.2	102.1	37.74	54.96	2.46
1961	73.3	38.9	112.2	6.7	119.0	47.25	68.20	2.48
1962	85.2	39.4	124.6	6.3	130.9	55.06	78.04	2.25
1963	74.8	32.6	107.4	7.1	114.5	63.08	88.11	1.99
1964	68.7	24.6	93.3	4.5	97.8	61.98	85.24	2.12
1965	73.2	21.7	94.8	5.1	100.0	58.28	78.42	2.89
1966	60.8	22.7	83.4	4.3	87.7	70.74	92.16	2.28
1967	51.8	22.9	74.7	3.7	78.3	63.24	80.03	2.16
1968	53.2	18.6	71.8	1.8	73.6	52.93	64.10	2.74
1969	63.3	18.4	81.7	0.2	81.8	49.60	57.20	3.51
1970	71.9	23.1	95.0	.5	95.4	51.88	56.79	3.56
1971	91.5	19.7	111.2	.1	111.2	47.30	49.26	3.33
1972	104.1	30.3	134.4	.1	134.5	43.45	43.45	4.27
1973	104.4	33.1	137.4	.3	137.7	134.88	127.48	3.54
1974	102.9	34.3	137.3	-	137.3	89.71	77.06	3.08
1975	83.6	44.2	127.8	.1	127.9	66.40	52.18	3.60
1976	95.3	37.6	132.9	1.2	134.1	123.85	92.66	2.80

1/ Average weighted by monthly production (between 1953 and 1958 simple average is quoted).
2/ Weighted average price divided by implicit price deflator for GNP (1972=100).

Note: Figures may not add to total because of rounding.
1976 figures are subject to revision.

Table A16.--Production and average price of fish solubles, by month, 1965-75 average and 1975-77

Month	Production				Price 1/			Menhaden meal to menhaden solubles		
	1965-75 average	1975	1976	1977	1975	1976	1977	1975	1976	1977
	Thousand short tons				Dollars per short ton			Price ratio		
January	1.4	3.3	3.1	1.9	86.25	2/ 75.00	2/140.0	3.05	3.58	2.95
February	1.4	1.5	1.4	1.5	77.50	2/ 75.00	2/144.5	2.98	3.60	2.93
March	2.3	2.8	3.5	5.0	75.00	80.62	2/147.5	2.94	3.39	2.94
1st quarter	5.1	7.6	8.0	8.4	79.58	76.87	144.0	2.99	3.52	2.94
April	5.0	7.0	8.4		73.75	79.38	2/166.9	3.23	3.19	2.89
May	11.4	20.3	10.1		71.25	93.38	2/177.0	3.18	3.02	2.74
June	17.4	19.9	17.1		64.06	118.50		3.41	2.98	
2d quarter	33.8	47.2	35.6		69.69	97.21		3.27	3.06	
July	18.7	21.2	25.4		63.50	138.75		3.69	2.77	
August	17.5	14.0	22.2		61.88	2/128.00		3.98	2.53	
September	11.8	14.2	18.4		66.00	2/127.50		3.92	2.83	
3d quarter	48.0	49.4	66.0		63.79	131.41		3.86	2.71	
October	8.8	14.8	9.0		71.88	2/129.50		3.70	2.84	
November	5.9	4.0	9.8		2/ 73.12	2/129.00		3.68	2.84	
December	3.7	4.7	4.4		2/ 74.69	2/135.00		3.56	2.84	
4th quarter	18.4	23.5	23.2		73.23	130.50		3.65	2.87	
Total	105.5	127.8	132.9		3/ 66.40	3/123.85		4/ 3.60	4/ 2.80	

1/ Menhaden solubles in tank cars; price quoted by brokers at New York City, f.o.b. East Coast plants.
2/ Nominal price.
3/ Weighted average.
4/ Menhaden meal to menhaden solubles weighted average.
Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

Table A17.--Fish oil production, imports, exports, domestic use, and apparent stock changes, 1950-76

Year	U.S. production 1/					Imports 2/	Total supplies 3/	Exports 4/	U.S. industrial utilization 2/	Net changes in stocks
	Menhaden	Tuna and mackerel	Herring	Other	Total					
	Million pounds									
1950	76.6	6.6	24.8	52.7	160.7	15.1	175.9	76.0	5/	5/
1951	94.0	5.3	11.3	22.9	133.5	17.4	150.9	49.8	5/	5/
1952	96.7	5.6	8.1	8.2	118.6	15.6	134.2	44.0	5/	5/
1953	133.7	4.9	5.4	6.7	150.7	12.0	162.6	108.5	5/	5/
1954	139.8	4.4	5.7	12.3	162.2	13.0	175.2	141.6	5/	5/
1955	159.2	4.1	8.2	13.6	185.1	10.4	195.5	142.7	74.9	- 22.1
1956	168.2	5.3	13.7	10.1	197.3	10.7	207.9	140.9	81.3	- 14.2
1957	118.5	5.5	14.1	10.1	148.2	7.2	155.4	114.9	83.0	- 42.5
1958	128.0	4.7	13.2	15.7	161.6	4.9	166.6	94.0	67.5	+ 5.1
1959	154.7	4.5	15.0	9.0	183.2	6.8	189.9	144.5	58.6	- 13.2
1960	183.4	3.8	11.5	6.9	205.6	8.9	214.6	143.7	56.8	+ 14.1
1961	235.2	5.7	6.1	7.6	254.6	8.4	263.0	122.5	64.8	+ 75.7
1962	232.6	5.0	5.1	4.8	247.5	10.8	258.2	123.0	62.9	+ 72.3
1963	167.6	5.9	5.7	4.5	183.7	8.6	192.2	262.3	52.1	- 122.2
1964	157.7	4.8	10.3	4.2	177.0	11.8	188.8	151.5	47.7	- 10.4
1965	175.2	4.8	8.5	4.3	192.8	6.0	198.7	103.8	44.5	+ 50.4
1966	144.2	4.1	7.9	6.5	162.7	12.7	175.3	77.3	38.8	+ 59.2
1967	101.4	5.2	5.7	7.6	119.9	7.0	126.9	76.8	35.8	+ 14.3
1968	152.0	4.5	9.5	5.7	171.7	5.9	177.6	65.1	30.0	+ 82.5
1969	149.2	4.2	3.5	11.1	168.0	4.2	172.2	196.1	34.1	- 58.0
1970	186.3	3.5	5.4	10.9	206.1	5.5	211.6	158.8	31.4	+ 21.4
1971	244.0	4.9	5.9	10.2	265.0	7.5	272.5	229.9	26.5	+ 16.1
1972	167.0	5.0	5.1	11.3	188.4	9.4	197.9	193.2	29.8	- 34.5
1973	200.5	7.4	1.7	15.0	224.6	6.7	231.4	247.8	26.5	- 42.9
1974	217.0	6.8	6/	14.2	238.0	12.4	250.3	199.1	35.0	+ 16.2
1975	213.3	6.4	6/	25.9	245.6	11.3	256.9	191.8	36.8	+ 28.3
1976	186.4	6.3	6/	11.7	204.4	20.9	225.3	179.2	38.4	+ 7.7

1/ Excludes whale and sperm oils.
2/ Excludes liver, whale and sperm oils.
3/ Production plus imports.
4/ Does not include exports of foreign merchandise.
5/ Not available.
6/ Included with other.

Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

Table A18.--U.S. production of fish oil, by month, 1966-75 average, and 1975-76

Time period	Anchovy			Menhaden			Tuna and mackerel			Other			Total			
	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1966-75 average	1975	1976	1977
	Million pounds															
January	0.4	1.3	0.9	-	-	0.1	0.3	0.3	0.5	0.3	0.2	0.1	0.9	1.8	1.6	0.6
February	.1	0.2	-	-	-	-	.2	.2	.3	.2	.1	.2	.5	0.6	0.5	0.5
March	-	.1	0.3	-	-	-	.4	.6	.6	.3	.3	.1	.7	.9	1.0	0.5
1st quarter	.5	1.6	1.2	-	-	0.1	.9	1.1	1.4	.8	.6	.4	2.2	3.3	3.1	1.6
April	.2	.4	-	4.2	2.6	8.3	.4	.5	.5	.6	.3	.2	5.3	3.9	9.0	
May	.1	.6	-	21.4	36.5	18.0	.4	.5	.5	.7	1.6	.3	22.7	39.1	18.7	
June	-	-	-	33.8	37.2	31.3	.4	.4	.4	1.0	1.9	.5	35.3	39.5	32.2	
2d quarter	.3	1.0	-	59.4	76.3	57.6	1.3	1.4	1.5	2.3	2.7	1.0	63.3	82.5	59.9	
July	-	-	-	39.0	53.5	38.4	.5	.5	.5	1.9	2.3	.6	41.4	56.2	39.5	
August	.1	-	-	35.9	33.2	41.9	.6	.8	.6	2.0	2.4	1.3	38.5	36.5	43.8	
September	.5	1.1	.5	23.1	32.6	36.8	.6	.7	.5	2.0	2.2	1.5	26.2	36.7	39.3	
3d quarter	.6	1.1	.5	98.0	119.4	117.1	1.6	1.9	1.6	5.9	6.9	3.4	106.0	129.4	122.6	
October	1.2	3.2	.9	11.5	15.1	10.0	.6	1.0	.6	1.3	1.4	1.6	14.6	20.7	13.0	
November	1.4	2.3	1.5	6.2	2.0	1.6	.5	.6	.5	.5	.4	.1	8.6	5.3	3.7	
December	1.0	3.5	1.1	2.3	0.5	-	.4	.5	.8	.4	.1	.1	4.1	4.6	2.0	
4th quarter	3.7	9.0	3.5	20.1	17.6	11.6	1.5	2.1	1.9	2.2	1.8	1.8	27.4	30.5	18.7	
Total	5.0	12.9	5.2	177.5	213.3	186.4	5.2	6.4	6.3	11.2	13.1	6.5	198.9	245.6	204.4	

Note: Figures may not add to total because of rounding.
1976 figures subject to revision.

Table A 19.--U.S. exports, domestic industrial use, and total disappearance of fish oil, by month, 1966-75 average, and 1975-77

Time period	Exports 1/				Domestic disappearance 2/				Total disappearance			
	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977	1966-75 average	1975	1976	1977
	Million pounds											
January	10.4	13.0	9.0	0.7	2.4	2.9	2.9	2.2	12.8	15.6	11.9	2.9
February	4.7	0.1	1.1	1.0	2.6	2.1	3.1	2.7	7.3	2.2	4.2	3.7
March	8.0	.1	3.2	3.7	2.5	2.3	3.3	3.2	10.5	2.4	6.5	6.9
1st quarter	23.1	13.2	13.3	5.4	7.5	7.0	9.3	8.1	30.6	20.2	22.6	13.5
April	3.8	4.7	0.1		2.8	2.5	3.7		6.6	7.2	3.8	
May	5.4	.1	5.2		2.6	2.4	3.3		8.0	2.5	8.5	
June	14.0	33.8	12.4		2.9	2.9	3.5		16.6	36.7	15.9	
2d quarter	23.0	38.6	17.7		8.3	7.8	10.5		31.5	46.4	28.2	
July	23.4	29.1	33.1		2.8	3.2	2.3		26.2	32.3	35.4	
August	28.0	33.9	35.0		3.0	4.2	3.4		31.0	38.1	38.4	
September	17.1	4.8	42.1		3.1	3.9	4.0		20.2	8.8	46.1	
3d quarter	68.5	67.8	110.2		8.9	11.4	9.7		77.4	79.2	119.9	
October	19.3	14.2	16.5		2.6	3.9	3.0		21.9	18.1	19.5	
November	12.2	18.9	14.6		2.6	3.7	3.1		14.8	22.6	17.7	
December	17.3	39.2	6.8		2.4	3.0	2.8		19.7	42.2	9.6	
4th quarter	48.8	72.3	37.9		7.6	10.6	8.9		56.4	82.9	46.8	
Total	163.7	191.9	179.2		32.3	36.8	38.4		196.0	228.7	217.6	

1/ Excluding whale oil.
2/ Includes marine mammal oil other than sperm oil and some hydrogenated fat (vegetable and animal) and other fats and oils in process.

Source: Bureau of the Census. Current Industrial Report, Fats and Oils, Production Consumption and Stocks Series: M20K (66-76). U.S. Department of Commerce, Bureau of the Census.

Note: Figures may not add to total because of rounding.

Table A20.--Wholesale prices of fish oil and soybean oils, and menhaden - soybean oil price ratio, 1950-76

Year	Menhaden 1/		Tuna and mackerel 2/		Soybean 3/		Menhaden oil to soybean oil
	Actual price	In 1972 dollars 4/	Actual price	In 1972 dollars 4/	Actual price	In 1972 dollars 4/	
	-Cents per pound-						-Price ratio-
1950	5/ 8.7	16.2	6/	6/	14.0	26.1	0.62
1951	5/14.0	24.4	6/	6/	16.8	29.3	.83
1952	5/ 7.2	12.4	6/	6/	11.0	19.0	.65
1953	5/ 6.8	11.7	6/	6/	12.4	21.0	.56
1954	5/ 7.8	13.1	6/	6/	13.3	22.3	.59
1955	5/ 8.2	13.4	6/	6/	11.6	19.0	.71
1956	5/ 8.8	14.0	6/	6/	13.2	21.0	.67
1957	5/ 8.9	13.7	7/ 6.9	10.0	12.2	18.8	.73
1958	5/ 8.0	12.1	7/ 5.6	8.2	10.5	15.9	.76
1959	7.6	11.2	7/ 3.2	4.7	9.0	13.3	.84
1960	6.2	9.0	4.2	6.1	8.8	12.8	.70
1961	6.1	8.8	4.8	6.9	11.5	16.6	.53
1962	4.2	6.0	5.0	7.1	9.0	12.8	.47
1963	6.7	9.4	4.9	6.8	8.9	12.4	.75
1964	8.8	12.1	5.9	8.1	9.2	12.6	.96
1965	9.3	12.5	8.0	10.8	11.2	15.1	.83
1966	9.4	12.2	7.3	9.5	11.6	15.1	.81
1967	6.4	8.1	5.2	6.6	9.6	12.1	.67
1968	4.7	5.7	3.2	3.9	8.2	9.9	.57
1969	5.8	6.7	3.1	3.6	9.1	10.5	.64
1970	10.2	11.2	5.0	5.5	12.0	13.1	.85
1971	8.8	9.2	5.6	5.8	12.6	13.1	.70
1972	7.2	7.2	5.1	5.1	10.6	10.6	.68
1973	11.6	11.0	6.5	6.1	19.8	18.7	.59
1974	25.4	21.8	12.3	10.6	35.8	30.8	.71
1975	16.0	11.0	8.7	6.8	25.4	20.0	.55
1976	17.0	12.7	8.2	6.1	18.8	14.1	.90

1/ Crude oil in tank cars; f.o.b. East Coast, average weighted price at New York City.
2/ Crude oil, f.o.b. plants; average weighted price at Los Angeles.
3/ Crude, tank cars, Decatur, Ill., average price.
4/ Actual price divided by the implicit price deflator for GNP (1972=100).
5/ f.o.b. Baltimore; simple average price.
6/ Not available.
7/ Simple average.

Table A21.--Selected average monthly fish oil prices and price ratio of menhaden oil to soybean oil, 1974-77

Time period	Anchovy 1/	Menhaden 2/	Tuna 3/	Northwest Europe 4/	Soybean 5/	Menhaden oil to soybean oil
	-Cents per pound-					-Price ratio-
1974						
January	15.6	21.0	7.1	23.1	28.6	.73
February	15.5	21.2	9.0	23.4	36.4	.58
March	6/	23.2	12.0	25.3	30.2	.77
April	6/	25.7	6/	25.6	28.2	.91
May	6/	6/	11.0	26.6	29.4	-
June	6/	25.0	11.0	25.3	31.6	.71
July	6/	25.4	12.3	24.5	40.5	.63
August	6/	26.0	12.8	27.0	43.3	.60
September	6/	25.0	13.0	25.4	40.7	.62
October	6/	24.9	14.0	26.8	42.8	.58
November	20.8	26.0	15.3	26.6	40.4	.64
December	22.7	25.0	15.4	24.2	28.0	.66
Average	18.6	24.4	12.1	25.3	35.8	.68
1975						
January	20.0	25.0	15.5	23.1	33.6	.74
February	18.9	7/ 20.0	15.5	19.2	29.4	.68
March	15.2	6/	10.0	16.6	29.1	-
April	15.0	6/	7.2	14.9	28.2	-
May	15.0	13.5	7.4	12.8	23.6	.57
June	15.0	13.0	7.5	13.0	23.3	.56
July	6/	13.5	7.5	14.7	27.5	.49
August	6/	14.6	7.5	14.6	28.4	.51
September	14.5	15.0	7.6	13.9	24.3	.62
October	14.1	15.2	7.7	14.1	21.4	.71
November	13.1	15.2	7.1	15.1	18.9	.80
December	11.6	15.5	6.8	15.1	16.8	.92
Average	15.2	16.0	8.9	15.6	25.4	.66
1976						
January	12.5	6/	7.6	14.6	16.2	-
February	12.5	6/	8.0	14.7	16.3	-
March	6/	15.2	6/	15.2	16.6	.92
April	6/	15.2	8.0	14.8	16.3	.93
May	6/	15.4	6/	15.3	15.8	.97
June	6/	15.4	6/	16.6	17.3	.89
July	6/	18.0	6/	18.5	20.9	.86
August	14.0	16.6	6/	17.2	20.4	.81
September	14.0	18.0	6/	18.6	22.5	.80
October	14.0	18.7	6/	19.0	20.7	.90
November	14.0	18.6	9.2	19.2	21.8	.85
December	14.0	18.5	9.5	19.1	21.0	.88
Average	13.6	17.0	8.5	16.9	18.8	.90
1977						
January	14.0	18.6	9.3	19.4	20.9	.88
February	14.0	19.2	9.5	20.0	21.3	.90
March	14.0	21.2	9.4	22.5	26.5	.80
April	14.0	23.9	9.5	25.3	29.6	.81
May	14.0	25.6	9.5	26.2	31.3	.82
June						

1/ Crude oil, f.o.b. plants, quoted at Los Angeles.
2/ Crude oil in tank cars; f.o.b. East Coast plants, quoted at New York City.
3/ Crude oil, f.o.b. plants, quoted at Los Angeles.
4/ Crude oil, any origin.
5/ Crude, tank cars, f.o.b. at Decatur, Ill.
6/ Supplies exhausted, no quotes.
7/ Nominal price.

Source: For NW. Europe prices; Oil World ISTA Mielke & Co., Hamburg, West Germany.
For soybean oil prices; Fats and Oil Situation, U.S. Department of Agriculture.

The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this department. Use of funds for printing this publication approved by the Office of Management and Budget, July 26, 1973; this approval expires June 30, 1978.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1977—240-890/6

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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